Physunio, and on the anatomy of a Chironomid larva of the genus Polypedilum.

The most peculiar elements of the fauna are the fishes and mollusca. Of fishes there have been found thirty-one species, representing seventeen genera and seven families; among the many new forms is an extraordinary eel-like creature which Dr. Annandale regards as a type of a distinct family of Apodes. Common features of the fishes are a large eye and small development of tactile appendages—features thought perhaps to be directly correlated with the remarkable transparency of the water. Of aquatic mollusca thirty-seven species are mentioned—a large proportion being new—representing twelve genera and eight families; they are said to display extraordinary variability, and their evolutional plasticity is discussed with much learning and an equal wealth of illustration.

Altogether, this investigation of the fauna of the Inlé Lake is a refined piece of work, reflecting high credit on the new zoological survey of India and its versatile director. Moreover, although the report shows an intelligent appreciation of the economic perspective, as is seen in the full and critical description of the fisheries of the lake and all their apparatus, it is free from any taint of that meretricious stuff which so commonly in ponderous administrative circles of the British Empire lives and spreads aloft under the pseudonym of science.

NOTES.

The first number of Nature appeared on November 4, 1869, so that the jubilee of the journal will be attained next week. In celebration of this event the issue of November 6 will be devoted to articles upon scientific progress and developments of the past fifty years, contributed by eminent workers in different fields. Through the active co-operation of these authorities it has been possible to secure a comprehensive collection of articles of great interest, which we believe will be accepted as a worthy epitome of outstanding advances in the half-century during which Nature has been published.

A meeting of the International Electrotechnical Commission was held in London on October 20 and the three following days, under the presidency of M. Maurice Leblanc. Representatives of twenty nations were present, and the reports of the various committees were considered. Signor Semenza stated that national agreement had been obtained in Italy on the subject of symbols, both in those used in textbooks and in those used in engineering drawings. He pointed out the many advantages that would ensue if international agreement could be obtained. The British list of symbols, which is finished and will shortly be published, is very similar to the Italian list, and complete agreement could be easily obtained. Nearly all the committees on nomenclature have published lists of definitions, etc., and the next step to take is to compare them all closely and then to issue a standard list. The committee on the rating of electrical machinery has been very busy, and has held many meetings. This subject, however, proves to be very difficult, as trade considerations have to be taken into account. The commission has definitely taken up the question of preparing a specification for aluminium on the same lines that it adopted for specifying pure copper. The copper specification was most useful, and has been adopted by every country in the world. A special committee was appointed to consider the question of screw-lamp caps and holders. This country is almost the only one which retains bayonet-holders for electric lamps, although many electrical engineers think that the screw-lamp caps are the best. Sir Richard Glazebrook presided at the banquet, and the Right Hon. A. J. Balfour made a thoughtful speech on standardisation which was much appreciated by all the engineers present. He pointed out that if it did not entirely prevent waste, it at least diminished it.

At the annual statutory meeting of the Royal Society of Edinburgh, held on October 27, the following office-bearers and members of council were elected:—*President:* Prof. F. O. Bower. *Vice-Presidents:* Prof. G. A. Gibson, Dr. R. Kidston, Prof. D. Noël Paton, Prof. A. Robinson, Sir George A. Berry, and Prof. W. Peddie. *General Secretary:* Dr. C. G. Knott. *Secretaries to Ordinary Meetings:* Prof. E. T. Whittaker and Dr. J. H. Ashworth. *Treasurer:* Dr. J. Currie. *Curator of Library and Museum:* Dr. A. Crichton Mitchell. *Councillors:* Prof. P. T. Herring, Prof. T. J. Jehu, Dr. A. Lauder, the Hon. Lord Guthrie, Prof. R. A. Sampson, Prof. J. Lorrain Smith, Dr. W. A. Tait, Surg.-Gen. W. B. Bannerman, Mr. H. M. Cadell, Prof. A. R. Cushny, Sir J. A. Ewing, and Mr. G. J. Lidstone.

Mr. Bruce Frederic Cummings, who died on October 22, will probably be known to a wider public as "W. N. P. Barbellion," author of "The Journal of a Disappointed Man," noticed by us on July 10 last, but his few scientific papers will ensure for him a no less enduring, if a more limited, reputation. Born at Barnstaple in August, 1889, in spite of meagre circumstances and increasing ill-health he taught himself zoology to such good purpose as to gain an assistantship in the entomological department of the British Museum, which he entered in January, 1912. He had previously contributed notes on local natural history to the *Zoologist,* and had been offered in the Marine Biological Laboratory at Plymouth a post which the illness of his father prevented him from taking up. In his "Journal" he affected scorn for the entomological work to which he was set, but his studies of lice soon gave rise to important papers published by the Zoological Society and in the *Annals of Natural History.* Another paper of much interest was on a scent-organ in the caddis-fly, *Sericostoma personatum.* Failing health caused him to resign his appointment in July, 1917. Mr. Cummings might never "have revolutionised systematic zoology," but he gave something more than the promise of distinguished work.

In a Memorandum by the Chancellor of the Exchequer on the future Exchequer balance-sheet (Cd. 376) an attempt is made to arrive at very tentative revised estimates of the national revenue and expenditure in a "normal" year. The estimated normal yearly expenditure is 808,000,000*l.*, and includes the following items:—Education, 45,900,000*l.*; upkeep of museums and galleries, 600,000*l.*; and scientific investigation and research, 400,000*l.* The year 1919–20 will not be a normal year, but as regards the above items of expenditure the only difference in the estimate is that the education is down for 41,000,000*l.* instead of 45,900,000*l.*

Dr. K. E. Laman, leader of the Congo mission of the Swedish Missionary Union, has lately returned to Stockholm with a large collection of ethnographical material drawn from the Bakongo, Bateke, and Bakuta people, as well as from five races of Ngunu.

This will be distributed between the ethnographic department of the Swedish Riksmuseum, the Ethnographic Museum of Gothenburg, and the Missionary Union's museum. Dr. Laman has made six visits to the Congo since 1890, and has paid particular attention to the language. His collection includes gramophone records of native songs.

The Swedish Academy of Science has reported favourably on a request by Prof. J. G. Andersson (formerly Director of the Swedish Geological Survey) for a Government grant of 90,000 kronor towards scientific researches and collections in China, where Dr. Andersson is now Geological Adviser to the Chinese Government. It is hoped that the Swedish Riksmuseum will thus receive rich collections in palæontology, prehistory, and zoology, but, to comply with conditions laid down by Profs. Andersson and Wiman, the fossil vertebrates will go to Upsala.

On October 21 the Manchester Chemical Club (president, Mr. R. H. Clayton) was incorporated with the Manchester Literary and Philosophical Society. A new chemical section of the society has been formed, and Sir William J. Pope, professor of chemistry in the University of Cambridge, delivered an address on "The Photography of Coloured Objects" to a large audience at the opening meeting on October 24.

A course of twelve Swiney lectures on "Geology and Mineral Resources of the British Possessions in Africa" will be given in the lecture-theatre of the Imperial College of Science and Technology (Royal College of Science, Old Building), Exhibition Road, S.W.7, by Dr. J. D. Falconer, on Mondays, Wednesdays, and Fridays, at 5.30, beginning on Monday, November 10. There will be no charge for admission.

A joint meeting of the Royal Society and the Royal Astronomical Society will be held at the Royal Society on Thursday, November 6, at 4.30 p.m., for the discussion of observations made during the total solar eclipse of May 29 last. Sir Frank Dyson will open the discussion, and will be followed by Prof. Eddington and other members of the eclipse expedition.

The Aristotelian Society will open its forty-first session on November 3. The president, Prof. James Ward, will deliver the inaugural address on the subject "In the Beginning . . ." The congress which the society arranges annually will be held next year at Oxford in September, and the French Philosophical Society will take part.

The opening meeting of the new session of the Institution of Electrical Engineers will be held at the Institution of Civil Engineers, Great George Street, Westminster, S.W.1, on Thursday, November 13, at 6 p.m., when the president, Mr. Roger T. Smith, will deliver his inaugural address.

The one hundred and first session of the Institution of Civil Engineers will be opened on Tuesday, November 4, at 5.30 p.m., when Sir John Purser Griffith, president, will deliver an address, and will present awards made by the council for papers dealt with during the past session.

Sir Henry Alexander Miers, Vice-Chancellor of the University of Manchester, has been appointed by an Order of Council dated October 16 to be a member of the Advisory Council to the Committee of the Privy Council for Scientific and Industrial Research.

The first meeting of the session of the Royal Geographical Society will be held at 8.30 p.m. on Monday, November 3, at the Æolian Hall, New Bond Street, when Major Kenneth Mason will read a paper on Central Kurdistan.

Messrs. Hodgson and Co., 115 Chancery Lane, W.C.2, are to sell by auction on Thursday, November 13, and Friday, November 14, the library of the late Sir William Crookes. A catalogue is obtainable from the auctioneers upon application.

An interesting series of fragments of prehistoric pottery was found early in the year in Eastern Macedonia near Drama and the plain of Philippi. The chief importance of the discovery lies in the relation with both the north and the south which is seen in the types of pottery found. Pottery similar to the so-called Dimini ware of Thessaly, and not hitherto found in Macedonia, occurred in large quantities. Fragments of a white-on-black ware of a date later than the Dimini ware and common in Thessaly were also found. A few fragments of this latter ware were found in Macedonia in 1916 near Salonica. Some remarkable fragments showed a combination of the white-on-black painted technique with incised white-filled patterns, thus showing that the two types of technique were contemporaneous. The wares of a northern type consisted for the most part of simple pottery decorated with large spiral or semi-spiral designs. Similar wares are common in the Upper Maritsa Valley near Philippopolis and generally in the Danubian area, and are essentially northern in type. A number of clay figurines of men, women, and domestic animals were also found. The human figures are for the most part steatopygous. The importance of these discoveries for the prehistoric study of Macedonia cannot be overestimated. The series will be published in the forthcoming Annual of the British School at Athens.

The October issue of *British Birds* contains an extremely interesting account of the nesting habits of the sparrowhawk. The author, Mr. J. H. Owen, gives a vivid description of the bathing habits of this bird and of its playful feints at capturing prey. At one time a hen he had under observation stooped at a rabbit two or three times, yet made no serious attempt to seize it; at another it trifled in the same way with a brood of partridges. But perhaps the most important of Mr. Owen's notes are those concerning the efforts of the bird to protect her eggs from the sun, which she did at the cost of great distress to herself. The nestlings suffered no less from this cause; at times, indeed, they were on the verge of collapse. Some very beautiful illustrations add greatly to the value of these notes.

The first number of the *Radio Review*, a monthly magazine devoted to scientific radio-telegraphy and radio-telephony, has been published. It contains short instalments of papers by André Blondel and Dr. Eccles on the functions applicable to directive aerials and on the internal action of a triode valve. In Blondel's paper the definitions are not very explicit, and so it is not easy to follow his reasoning. Dr. Eccles's paper is simpler, but in order to follow it the reader must have a knowledge of Child's and Langmuir's papers in the *Physical Review*. In a brief introduction the editor, Prof. Howe, states the policy and aims of the review. The remaining part of this issue consists of abstracts and reviews of books. Apparently the aim of the journal is to do for radio-telegraphy what the *Philosophical Magazine* does for physics. The amount of matter in the first number strikes us as rather meagre.

The Institution of Electrical Engineers has issued an amended edition of its Wiring Rules. These rules have been universally adopted in this country, and they are annually amended so as to keep them abreast of the latest practice. The amendments this year are almost of revolutionary importance. As we foreshadowed some months ago, the electricians have now abandoned measuring the size of wires in terms of the standard wire gauge (S.W.G.). They have dropped gauges altogether. Instead of speaking of a No. 20 wire, they speak of a 0·036 wire—that is, one having a diameter of 0·036 of an inch. Similarly, instead of writing 3/20 for a cable consisting of three strands of No. 20 wire, they write 3/0·036″. Formerly they had a choice of fifty-seven cables for use in electric wiring, but now there are only twenty-four sizes. Careful consideration has shown that this number is sufficient. Naturally this will be a great boon to the cable manufacturers. The British Engineering Standards Association (the B.E.S.A.) is to be congratulated on having initiated this important reform.

For more than forty years the Institution of Civil Engineers has printed in its Proceedings short abstracts of papers on engineering subjects which have appeared in periodicals and in the Transactions of scientific and technical societies. The institution now proposes to issue them separately in quarterly numbers, the first of which appears this month. Although its length is affected by the difficulty of obtaining periodicals from abroad, the first number gives ninety-nine abstracts, which cover seventy pages. Subject- and name-indexes are provided, and it is much to be desired that these should be made more useful by co-ordination in annual or two-yearly indexes. The abstracts are grouped under two heads:—Materials, Measurements, etc., and Engineering Practice. As the latter term is interpreted generously, there is some overlapping with abstracts issued by other bodies, and some system of interchange of abstracts will have to be evolved to prevent several abstracts of the same paper being written.

At University College, London, on October 21, a public lecture was given by Prof. J. A. Fleming entitled "Speaking Across the Atlantic by Wireless Telephony." Prof. Fleming opened by giving a general review of the physical facts leading up to ordinary telephony, and the application of Fourier's theorem to wave-forms, with their consequent resolution into harmonics, and the distortion produced in ordinary speech, due to the different velocities and damping of the various harmonics. Since the electromagnetic waves employed in wireless telegraphy have a velocity which is independent of the wave-length, and a falling-off of intensity with distance which is the same for all frequencies, there is no distortion of the sound in wireless telephony similar to that which occurs in long-distance telephony of the ordinary kind. Speech transmitted by wireless is particularly clear and distinct. The three typical modes of producing electromagnetic waves were explained and illustrated by lantern-slides -the high-frequency alternator, the Poulsen arc, and the three-electrode thermionic valve used as generator. Prof. Fleming explained the mode of action of the Fleming valve as a rectifier, and the development of the three-electrode valve from this. The Marconi Co. now uses seven such valves in cascade for amplifying in receiving the feeble trans-Atlantic speech, since the amplification increases geometrically with the number of valves used. By a series of trials the Marconi Co. has demonstrated the possibility of speech over 1800 miles across the Atlantic, and, moreover, the trials were carried out at an unfavourable time of day, 10 a.m. to 1 p.m. The audience was large and appreciative, one of the larger lecture-theatres of the college being required. A course of six lectures on "Thermionic Valves" is to follow on succeeding Wednesdays at 5 p.m.

Messrs. Chapman and Hall, Ltd., announce:—"Aeronautical Engines," Major A. G. Clark; "Theory and Practice of Aeroplane Design," S. T. G. Andrews and S. F. Benson; "Geometry for Architects and Builders," J. E. Paynter; "Mathematics for Engineers," W. N. Rose, vol. ii.; and "Metric System for Engineers," C. B. Clapham. *Mr. W. Heinemann* is to publish this autumn Sir Ernest Shackleton's new book. It will be entitled "South: The Story of Shackleton's Last Expedition, 1914–1917." *Messrs. G. Routledge and Sons, Ltd.,* promise "Bakery Machinery," A. W. Mathys; "The Utilisation of Natural Powers," E. L. Burne; "Engineering Instruments and Meters," E. A. Griffiths; "Direct-current Dynamos and Motors," Prof. W. B. Griffith; and "Manufacture and Installation of Electric Cables," C. J. Beaver (in the Industrial Supremacy Books Series). In their Efficiency Books they will publish "Bibliography of Industrial Efficiency and Factory Management," H. G. T. Cannons, and a new edition of "Lectures on Industrial Psychology," B. Muscio. *Messrs. H. Sotheran and Co.* will shortly issue an Illustrated Library edition of their "Bibliotheca Chemico-Mathematica." It will contain many full-page plates, reproductions of title-pages, textual passages from rare or historically important works, and an analytical subject-index.

The special catalogues of Messrs. H. Sotheran and Co. (140 Strand, W.C.2) are models of what catalogues of second-hand books should be, for they furnish in an interesting manner much out-of-the-way information respecting many of the volumes offered for sale, and are carefully classified. Messrs. Sotheran's latest catalogue (No. 773, 2*s.* 6*d.* net) deals with rare books on exact and applied science, and includes the library of the late Prof. Henrici and a portion of that of Prof. G. Govi, of the University of Naples. Its 3336 items are classified under the headings: General and Collected Works; Mathematics; Astronomy and Geodesy; Dialling and Horology; Physics; The Microscope and Microscopy; Meteorology and Physical Geography; Chemistry; Crystallography; Chemical Technology, including Photography; Mining and Metallurgy; Engineering; Seamanship, Airmanship, and Naval Architecture; and sets of Learned Societies' Publications and other scientific journals. The catalogue will be very useful for reference.

OUR ASTRONOMICAL COLUMN.

Large Meteors.—On October 21, at 8h. 35m. G.M.T., a meteor brighter than Jupiter was observed by Mrs. Wilson at Totteridge, by Mr. C. P. Adamson at Wimborne, and by Mr. H. G. Baker at Wangford. It was directed from a radiant near α Cephei, and moved slowly at an average height in the atmosphere. On October 22 at 7h. 42m. G.M.T. a bright meteor was seen from Bristol, Stowmarket, Wimborne, and Plumstead, S.E. It had a very long horizontal flight of about three hundred and thirty-five miles at a velocity of thirty-three miles per second, and passed from over a point twenty miles north-east of York to thirty miles south-west of St. Valery, France. Its height was about seventy-four miles, and its radiant at $156° + 39°$. It is very suggestive that the radiant point of meteors from the comet of 1739, as computed by Prof. A. S. Herschel, was at $157° + 39°$ for October 22; meteor speed = 39 miles per second. The